

REMARKS

Claims 1-16 and 26 are pending in the present application. Reconsideration of the application is respectfully requested in view of the following responsive remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

In the office action of January 24, 2006, the following actions were taken:

- (1) Claims 1-16, and 26 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,841,116 to Schmidt (hereinafter "Schmidt"); and
- (2) Claims 7-10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt in view of U.S. Patent No. 5,287,435 to Cohen (hereinafter "Cohen").

It is respectfully submitted that the presently pending claims be examined and allowed.

Present Invention

Claims 1 and 26 of the present invention teach a solid freeform fabrication system for producing three-dimensional objects. The system includes a dispensing system or means which separately dispenses build material and support material. The dispensing system is an ink-jet printing dispensing system. The build material and the support material are adapted to contact one another at an interface after being dispensed. The system further includes a curing system which is adapted to harden the build material after it is dispensed but before the support material is dispensed. This feature prevents mixing between the build material and the support material at a lateral interface, thus reducing the jaggedness of the three-dimensional object that can be caused by liquid bleed between the support material and the build material during fabrication.

Rejection under 102(b)

The Examiner rejected claims 1-5, 13-16 and 26 under 35 U.S.C. as being anticipated by Schmidt. Before discussing this rejection, it is thought proper to briefly state what is required to sustain such a rejection. It is well settled that "[a] claim is anticipated only if each and every element as set forth in the claims is found

either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. union Oil of California*, 814 F.2d 628, 2 U.S.P.Q. 2d 1051, 1053 (Fed. Cir. 1987). In order to establish anticipation under 35 U.S. C. § 102, all elements of the claims must be found in a single reference. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 231 U.S.P.Z. 81, 90 (Fed. Cir. 1986) cert. denied 107 S.Ct. 1606 (1987). In particular, as pointed out by the court in *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1981), cert denied, 469 U.S. 851 (1984), “anticipation requires that each and every element of the claimed invention be disclosed in a prior art reference.” “The identical invention must be shown in as complete detail as is contained in the...claim.” *Richarson v. Suzuki Motor Co.* 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

Schmidt teaches of a selective deposition modeling method which uses UV curable phase change build material, and support material that is not UV curable. Relevant portions of the specification from columns 13 to 15 describing the relationship between these two materials is provided below:

The build material and support material are dispensed as discrete droplets 30 in the flowable state, which solidify upon contact with the layer 28 as a result of a phase change. . . Likewise, pixel coordinates located outside of the object may be targeted for deposition of the non-curable phase change material 48 to form the supports for the object as needed. Generally, once the discrete droplets are deposited on all the targeted pixel locations of the bit map to establish an initial layer thickness, a solid fill condition is achieved. See col. 13, lines 21-36. (emphasis added).

Importantly, however, planarizing must be completed for a given layer prior to curing the layer. See col. 13, lines 64-65. (emphasis added).

A waste collection system (not shown in FIG. 1) is used to collect the excess material generated during planarizing. See col. 14, lines 14-16.

Preferably the non-curable material is selected so as to be easily removed from the three-dimensional object at the end of the layerwise build process, yet have a similar melting point and freezing point as the curable material so that dispensing and planarizing will be uniform. In this embodiment, separate material delivery systems are required for the two different materials, however only one waste collection system is needed since the waste is a combination of both materials collected after planarizing. See col. 14, lines 26-35. (emphasis added).

After all the material for each layer was dispensed and solidified, a planarizer 32 was then used to normalize each layer. After normalization, each layer is

then provided with a flood exposure to UV radiation by radiation source 38 which is part of an exposure trolley 38. The flood exposure cures the build material and not the support material. Sample parts were made in this manner and the support material removed to expose the three-dimensional objects. See col. 15, lines 38 to 45.

It is clear from these passages that, first, both build material and support material are applied to an entire layer, and then the layer as a whole is planarized. After planarization, the normalized layer as a whole is flooded with UV radiation (i.e. both the UV curable build material and the non-UV curable support material). Thus, an important aspect of both the system of claim 1 and the system of amended claim 26 is missing in this reference. Both systems require either a curing system or a means for curing the build material prior to application of the support material so that mixing between the build material and the support material is inhibited at an interface where the materials would be contacted with one another at a common layer. As this is not taught by Schmidt, withdrawal of this rejection is respectfully requested.

Rejections under 103(a)

The Examiner has rejected claims 6-12 under 35 U.S.C. 103(a) as being unpatentable over Schmidt in view of Cohen. As discussed above, the currently pending independent claims require the system be adapted for curing the build material before applying the support material. Neither of these references teaches or suggests this concept. Therefore, each and every element of claim 1 is not taught by the combination of the two cited references, and thus, all of the elements of claims 6-12 are also missing in this combination. As such, it is respectfully requested that this rejection be withdrawn and all the claims, both independent and dependent, be allowed.

Without commenting on the other rejected claims under this section, there is at least one other element that is different in claim 9 compared to the combination of Schmidt and Cohen. Claim 9 sets forth, a milling system which provides a first waste stream for removing excess build material, and a second waste stream for removing support material. As made clear at column 14, lines 30-35 of Schmidt, “only one waste collection system is needed since the waste is a combination of both materials collected after planarizing.” (emphasis added). Thus, for at least this independent

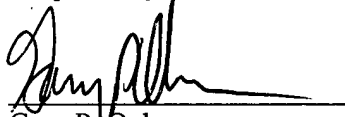
reason, claim 9 is further distinguishable over Schmidt in view of Cohen and reconsideration is respectfully requested.

In view of the foregoing, Applicant believes that claims 1-16 and 26 present allowable subject matter and allowance is respectfully requested. If any impediment to the allowance of these claims remains after consideration of the above remarks, and such impediment could be removed during a telephone interview, the Examiner is invited to telephone Jeff Limon at (541) 715-5979 so that such issues may be resolved as expeditiously as possible.

Please charge any additional fees except for Issue Fee or credit any overpayment to Deposit Account No. 08-2025

Dated this 24th day of April, 2006.

Respectfully submitted,



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